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Osceola County, Florida

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Prepared for

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NATIONAL EUTROPHICATION SURVEY

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16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

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REPORT
ON
LAKE KISSIMMEE
OSCEOLA COUNTY
FLORIDA
EPA REGION IV
WORKING PAPER No. 261

WITH THE COOPERATION OF THE
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION
AND THE
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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Florida Department of Environmental Regulation for professional involvement and to the Florida National Guard for conducting the tributary sampling phase of the Survey.

Joseph W. Landers, Jr., Secretary of the Department of Environmental Regulation; John A Redmond, former Director of the Division of Planning, Technical Assistance, and Grants; and Dr. Tim S. Stuart, Chief of the Bureau of Water Quality, provided invaluable lake documentation and counsel during the survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

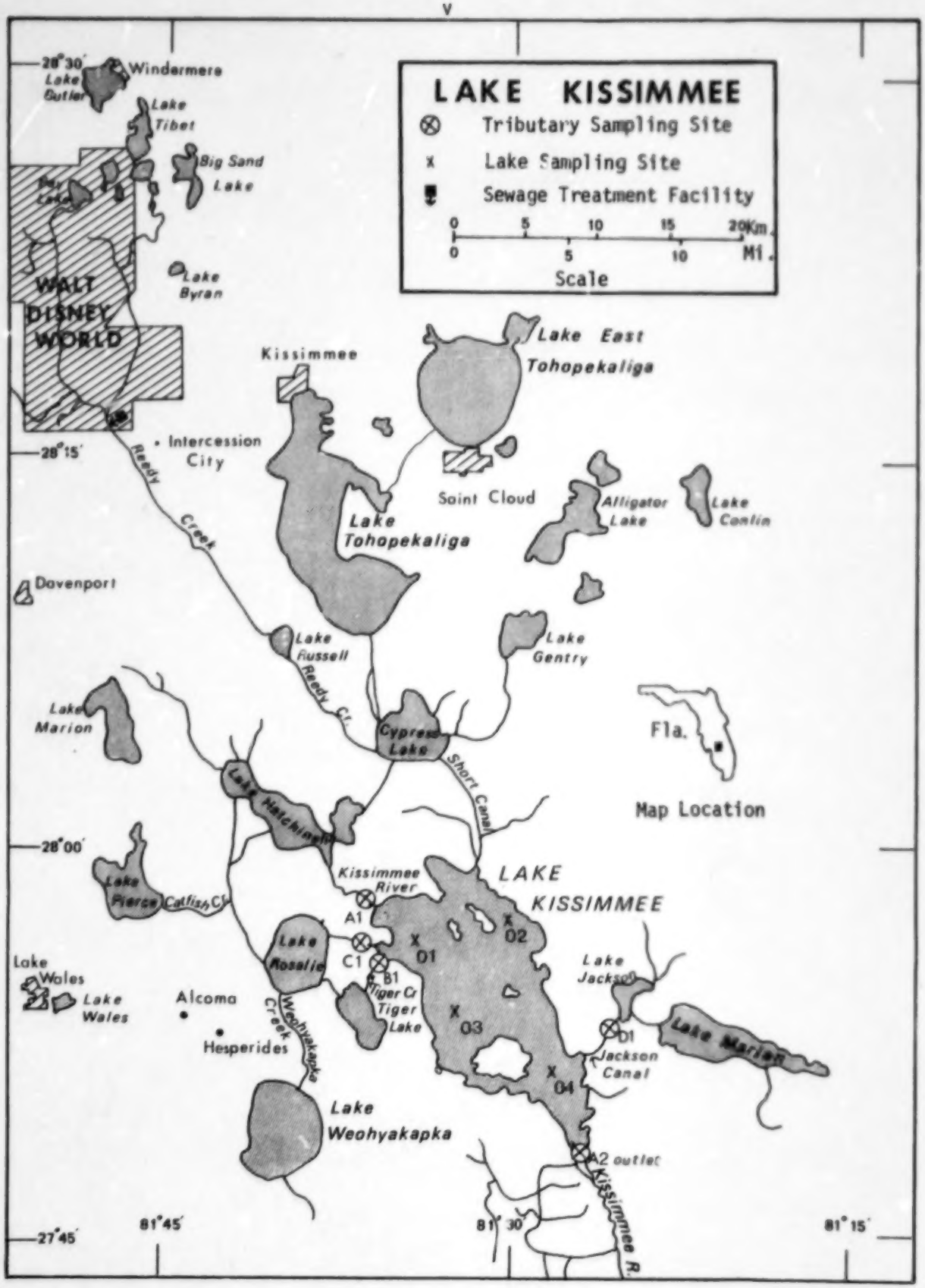
Major General Henry W. McMillan (Retired), then the Adjutant General of Florida, and Project Officer Colonel Hugo F. Windham, who directed the volunteer efforts of the Florida National Guard, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF FLORIDA

LAKE NAME	COUNTY
Alligator	Columbia
Apopka	Lake, Orange
Banana	Polk
Crescent	Flagler, Putnam
Doctors	Clay
Dora	Lake
East Tohopekaliga	Osceola
Effie	Polk
Eloise	Polk
George	Putnam, Volusia
Gibson	Polk
Glenada	Highlands
Griffin	Lake
Haines	Polk
Hancock	Polk
Horseshoe	Seminole
Howell	Orange, Seminole
Istokpoga	Highlands
Jessie	Polk
Jessup	Seminole
Kissimmee	Osceola
Lawne	Orange
Lulu	Polk
Marion	Polk
Minnehaha	Orange
Minneola	Lake
Monroe	Seminole, Volusia
Munson	Leon
Okeechobee	Glades, Hendry, Martin, Okeechobee, Palm Beach
Poinsett	Brevard, Orange, Osceola
Reedy	Polk
Seminole	Jackson, FL; Decatur, Seminole, GA
Seminole	Pinellas
South	Brevard
Talquin	Gadsden, Leon
Tarpon	Pinellas
Thonotosassa	Hillsborough
Tohopekaliga	Osceola
Trout	Lake
Weohyakapka	Polk
Yale	Lake


LAKE KISSIMMEE
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
0 5 10 15 20Km
0 5 10 Mi.
Scale
28°30'
28°15'
28°00'
27°45'
81°45'
81°30'
81°15'
Windermere
Lake Butler
Lake Tibet
Big Sand Lake
Lake Byran
WALT DISNEY WORLD
Kissimmee
Lake East Tohopekaliga
Intercession City
Reedy Creek
Saint Cloud
Lake Tohopekaliga
Alligator Lake
Lake Conlin
Davenport
Lake Russell
Reedy Cr.
Lake Gentry
Lake Marion
Cypress Lake
Short Canal
Fla.
Map Location
Lake Hatchineha
Kissimmee River
LAKE KISSIMMEE
Lake Pierce
Catfish Cr.
A1
C1
B1
Tiger Cr
Tiger Lake
Lake Rosalie
01
02
03
04
Lake Jackson
D1
Jackson Canal
Lake Marion
Lake Wales
Lake Wales
Alcoma
Hesperides
Weohyakapka Creek
Lake Weohyakapka
A2 outlet
Kissimmee R.

LAKE KISSIMMEE

STORET NO. 1224

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate that Lake Kissimmee is eutrophic, but McCaffrey et al. (1976) consider the lake to be between mesotrophic and mesoeutrophic.

This lake ranked eighth in overall trophic quality when the 41 Florida water bodies sampled in 1973 were compared using a combination of six lake parameters*. None of the lakes had less but one had the same median dissolved phosphorus, three had less and one had the same median total phosphorus, 15 had less median inorganic nitrogen, 14 had less mean chlorophyll a, and 11 had greater mean Secchi disc transparency.

Survey limnologists noted that emergent and floating vegetation occupied the shoreline shallows at all stations in September and November, and blue-green algae were dominant in all of the phytoplankton samples (see page 7).

B. Rate-Limiting Nutrient:

Results of the algal assay are not considered representative of conditions in the lake at sampling time (03/14/73) due to nutrient losses in the sample during shipment from the field to the laboratory.

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* See Appendix A.

The lake data indicate phosphorus limitation in March and September and nitrogen limitation in November.

C. Nutrient Controllability:

1. Point sources--No known point sources directly impacted Lake Kissimmee during the sampling year. Direct and indirect point sources contributing nutrients to Reedy Creek and upstream lakes Tohopekaliga* and Weohyakapka* (see map, page v) may affect Lake Kissimmee; but because of nutrient retention in the receiving lakes and probable sedimentation and/or biological assimilation in the intervening water bodies, streams, and canals, it is questionable whether those indirect sources had a significant impact during the sampling year. The nutrient export rates and N/P ratios of the connecting streams (see page 13) tend to support this assessment. However, below-normal precipitation occurred during the sampling year and the effect of those sources during different hydrologic conditions should be evaluated.

The sampling year phosphorus loading of 0.49 g/m^2 is a little less than that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a eutrophic loading (see page 13). However, the difference is small (0.05 $g/m^2/yr$) and very likely is the result of uncertainty as to the mean depth of the lake (estimated) and, therefore, lake volume and hydraulic retention time, as well as the limits of accuracy of stream flow estimates provided by the U.S. Geological

* Respectively, Working Paper No. 277 and 279.

Survey (at best, plus or minus 10%). The trophic condition of the lake per se is evidence of excessive nutrient inputs.

2. Non-point sources--Non-point sources accounted for essentially all of the phosphorus load to Lake Kissimmee during the sampling year. The Kissimmee River, including the unknown but presumably insignificant contributions of the distant point sources, accounted for almost 70% of the total. The Kissimmee River drains predominantly agricultural land upstream of the lake, and it appears that any significant reduction of nutrient inputs to the lake would involve control of nutrient losses from cropland in the river basin.

Reedy Creek and Short Canal were not sampled during the Survey. However, other data indicate that minimal amounts of phosphorus are contributed to Lake Kissimmee via these tributaries (Herndon, 1975).

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Morphometry††:

1. Surface area: 141.40 kilometers^2.
2. Mean depth: 1.8 meters.
3. Maximum depth: 2.4 meters.
4. Volume: 254.520 x 10^6 m^3.
5. Mean hydraulic retention time: 88 days (based on outflow).

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Kissimmee River	2,988.9	22.96
Tiger Creek and Unnamed Creek C-1	396.3	3.51
Jackson Canal	264.2	2.34
Minor tributaries & immediate drainage -	358.4	5.09
Totals	4,007.8	33.90

2. Outlet -

Kissimmee River	4,149.2**	33.39

C. Precipitation***:

1. Year of sampling: 122.9 centimeters.
2. Mean annual: 134.1 centimeters.

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† Table of metric conversions--Appendix B.
†† Surface area from FL Game & Fresh Water Fish Comm. (Anonymous, 1972); depths estimated from soundings reported in Appendix D.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake.
*** See Working Paper No. 175.

III. WATER QUALITY SUMMARY

Lake Kissimmee was sampled three times in 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from four stations on the lake and from one or more depths at each station (see map, page v). During each visit, a single depth-integrated (near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, a single 18.9-liter depth-integrated sample was composited for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll *a* analysis. The maximum depths sampled were 1.8 meters at station 1, 2.4 meters at station 2, 2.4 meters at station 3, and 1.5 meters at station 4.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE KISSIMMEE
STORET CODE 1224

PARAMETER	1ST SAMPLING (3/14/73) 4 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (9/ 5/73) 4 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (11/ 7/73) 4 SITES RANGE	MEAN	MEDIAN
TEMP (C)	23.8 - 24.7	24.1	24.0	28.0 - 29.2	28.8	28.8	22.8 - 23.2	23.1	23.1
DISS OXY (MG/L)	6.2 - 8.7	7.4	7.3	6.8 - 8.2	7.7	7.8	7.4 - 8.0	7.7	7.7
CNDCTVY (MCROMO)	115. - 150.	131.	135.	136. - 145.	140.	139.	107. - 115.	112.	113.
PH (STAND UNITS)	7.2 - 8.0	7.6	7.6	7.2 - 8.5	7.8	7.9	7.0 - 7.3	7.1	7.1
TOT ALK (MG/L)	11. - 23.	20.	22.	17. - 24.	20.	20.	15. - 19.	18.	18.
TOT P (MG/L)	0.026 - 0.041	0.032	0.031	0.028 - 0.081	0.043	0.037	0.031 - 0.054	0.037	0.035
ORTHO P (MG/L)	0.004 - 0.007	0.005	0.004	0.006 - 0.013	0.008	0.007	0.010 - 0.015	0.011	0.010
NO2+NO3 (MG/L)	0.060 - 0.080	0.067	0.065	0.100 - 0.140	0.122	0.120	0.040 - 0.090	0.054	0.050
AMMONIA (MG/L)	0.060 - 0.100	0.079	0.080	0.100 - 0.130	0.120	0.120	0.050 - 0.070	0.057	0.060
KJEL N (MG/L)	1.000 - 1.400	1.162	1.150	1.600 - 2.800	2.050	2.000	1.300 - 1.700	1.500	1.500
INORG N (MG/L)	0.120 - 0.180	0.145	0.145	0.200 - 0.270	0.242	0.245	0.090 - 0.160	0.111	0.105
TOTAL N (MG/L)	1.060 - 1.480	1.230	1.220	1.700 - 2.930	2.172	2.120	1.340 - 1.750	1.554	1.550
CHLRPYL A (UG/L)	12.0 - 19.9	15.9	15.9	30.2 - 42.4	37.5	38.7	11.9 - 22.4	19.0	20.8
SECCHI (METERS)	0.8 - 1.1	0.9	0.9	0.9 - 0.9	0.9	0.9	0.9 - 1.0	0.9	0.9

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal units per ml
03/14/73	1. Anabaenopsis sp.	4,048
	2. Dactylococcopsis sp.	3,303
	3. Lyngbya sp.	2,451
	4. Rhizosolenia sp.	2,237
	5. Coelastrum sp.	1,705
	Other genera	4,687
	Total	18,431
09/05/73	1. Dactylococcopsis sp.	18,634
	2. Lyngbya sp.	6,930
	3. Anabaenopsis sp.	6,160
	4. Coelastrum sp.	2,926
	5. Chroococcus sp.	2,722
	Other genera	10,318
	Total	47,740
11/07/73	1. Lyngbya sp.	7,828
	2. Dactylococcopsis sp.	4,363
	3. Coelastrum sp.	2,823
	4. Pennate diatoms	2,823
	5. Microcystis sp.	2,310
	Other genera	10,870
	Total	31,017

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
03/14/73	1	12.0
	2	16.8
	3	19.9
	4	15.0
09/05/73	1	30.2
	2	42.4
	3	36.6
	4	40.9
11/07/73	1	11.9
	2	19.4
	3	22.2
	4	22.4

C. Limiting Nutrient Study:

The algal assay results are not considered representative of conditions in the lake at sampling time due to a decrease in inorganic nitrogen and an increase in orthophosphorus in the sample during shipment from the field to the laboratory. However, the lake data indicate phosphorus limitation in March and September (the mean inorganic nitrogen/orthophosphorus ratios were 17/1 or greater at all stations) and nitrogen limitation in November (the mean N/P ratios were 11/1 or less at all stations).

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Florida National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v). Sampling was begun in March, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Florida District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were calculated using mean annual concentrations and mean annual flows. The combined loads of Tiger Creek and Unnamed Creek C-1 were calculated using the means of the nutrient concentrations in both streams and the combined mean annual flow.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient concentrations at stations A-1 and D-1 and the mean annual ZZ flow.

No known point sources directly impacted Lake Kissimmee during the sampling year.

A. Waste Sources:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Lake Wales Ranch Shores*				
Plant #1	200 }	evaporation-	18.9 }	No
Plant #2	300 }	percolation ponds	106.0 }	discharge
Walt Disney World**	-	act. sludge	6661.6	Land disposal (60%) and Reedy Creek (40%)***

2. Known industrial - None***

* Lubin, 1975.
** Nichols, 1973; flow shown estimated by operator.
*** McCaffrey et al., 1976.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
Kissimmee River	47,870	69.6
Tiger Creek and Unnamed Creek C-1	3,310	4.8
Jackson Canal	2,900	4.2
b. Minor tributaries & immediate drainage (non-point load) -	8,505	12.4
c. Known municipal STP's - None	-	-
d. Septic tanks* -	5	<0.1
e. Known industrial - None	-	-
f. Direct precipitation** -	6,220	9.0
Total	68,810	100.0

2. Outputs -

Lake outlet - Kissimmee River 36,865

3. Net annual P accumulation - 31,945 kg.

* Estimate based on 17 lakeshore dwellings; see Working Paper No. 175.
** Brezonik and Shannon, 1971.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
a. Tributaries (non-point load) -		
Kissimmee River	1,399,855	70.6
Tiger Creek and Unnamed Creek C-1	146,250	7.4
Jackson Canal	96,105	4.8
b. Minor tributaries & immediate drainage (non-point load) -	259,075	13.1
c. Known municipal STP's - None	-	-
d. Septic tanks* -	180	<0.1
e. Known industrial - None	-	-
f. Direct precipitation** -	82,010	4.1
Total	1,983,505	100.0

2. Outputs -

Lake outlet - Kissimmee River 1,478,835

3. Net annual N accumulation - 504,670 kg.

* Estimate based on 17 lakeshore dwellings; see Working Paper No. 175.
** Brezonik and Shannon, 1971.

D. Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr	N/P ratio
Kissimmee River	16	468	29/1
Tiger Creek and Unnamed Creek C-1	8	369	46/1
Jackson Canal	11	364	33/1

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Note, however, that Florida lakes may assimilate phosphorus at a somewhat higher level than that suggested by Vollenweider (Shannon and Brezonik, 1972).

Essentially, Vollenweider's "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m²/yr	0.49	0.23	14.0	3.6

Vollenweider phosphorus loadings (g/m²/yr) based on estimated mean depth and hydraulic retention time of Lake Kissimmee:

"Dangerous" (eutrophic loading)	0.54
"Permissible (oligotrophic loading)	0.27

V. LITERATURE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS INTRO P
1201	ALLIGATOR LAKE	0.026	0.200	474.000	67.733	13.100	0.300
1202	LAKE APOPKA	0.102	0.230	484.170	46.611	8.200	0.019
1203	LAKE BANANA	0.060	0.260	482.667	208.600	3.600	0.293
1206	LAKE CRESCENT	0.065	0.130	473.884	10.211	10.200	0.033
1207	DOCTORS LAKE	0.084	0.120	465.555	27.100	10.600	0.028
1208	LAKE DORA	0.102	0.240	482.889	54.478	7.400	0.022
1209	LAKE EFFIE	1.480	0.410	489.000	261.433	15.000	0.950
1210	LAKE GEORGE	0.129	0.165	469.308	35.000	11.000	0.063
1211	LAKE GIBSON	0.167	0.115	470.000	19.675	10.200	0.069
1212	GLENADA LAKE	0.134	0.165	454.167	27.667	14.700	0.072
1214	LAKE GRIFFIN	0.119	0.260	481.333	66.855	6.600	0.038
1215	LAKE HAINES	0.063	0.115	462.667	26.567	10.600	0.014
1217	LAKE HANCOCK	0.772	0.195	483.500	97.900	5.600	0.158
1219	LAKE HORSESHOE	0.034	0.130	459.000	12.067	11.500	0.023
1220	LAKE HOWELL	1.260	0.285	464.000	54.117	9.000	1.175
1221	LAKE ISTOKPOGA	0.039	0.120	464.222	6.594	8.600	0.010
1223	LAKE JESSUP	0.492	0.290	487.000	70.550	7.600	0.288
1224	LAKE KISSIMMEE	0.034	0.145	463.667	24.142	8.800	0.007
1227	LAKE LIRLU	1.490	1.065	483.000	276.566	14.300	1.030
1228	LAKE MARION	0.044	0.260	468.833	29.467	7.600	0.016
1229	LAKE MINNEHAHA	0.038	0.060	430.000	8.733	7.700	0.012
1230	LAKE MINNEOLA	0.018	0.070	466.333	3.333	7.400	0.004
1231	LAKE MONROE	0.148	0.300	474.555	14.225	10.800	0.128
1232	LAKE OREECHOBEE	0.063	0.185	472.356	14.524	9.800	0.010
1234	LAKE POINSETT	0.085	0.150	464.000	6.500	10.600	0.051
1236	LAKE REEDY	0.031	0.330	468.500	34.837	10.000	0.008
1238	LAKE SOUTH	0.074	0.130	466.000	23.167	9.000	0.026
[illegible]	LAKE TALQUIN	0.085	0.240	462.167	9.483	14.400	0.031

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
1240	LAKE THONOTOSASSA	0.095	0.095	486.167	37.700	10.200	0.565
1241	LAKE TOHOPEKALIGA	0.240	0.200	472.917	38.633	10.500	0.152
1242	TROUT LAKE	1.110	0.650	472.000	76.967	12.900	0.970
1243	LAKE WEOHYAKAPKA	0.047	0.080	458.667	7.767	8.200	0.011
1246	LAKE YALE	0.027	0.100	441.000	25.367	7.600	0.014
1247	LAKE MUNSON	1.475	0.925	486.667	140.317	12.200	0.852
1248	LAKE SEMINOLE	0.234	0.175	473.833	102.860	8.600	0.020
1249	LAKE LAWNE	2.500	1.350	494.667	84.900	10.400	0.117
1250	LAKE TARPON	0.041	0.070	488.889	6.867	9.900	0.027
1252	LAKE ELOISE	0.486	0.170	485.333	70.233	12.200	0.339
1254	LAKE JESSIE	0.051	0.090	452.667	26.300	10.800	0.011
1261	EAST LAKE TOHOPEKALIGA	0.042	0.070	440.833	5.167	9.400	0.007
1264	PAYNE'S PRAIRIE LAKE (NO	1.260	0.140	470.000	88.200	7.400	1.210

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1201	ALLIGATOR LAKE	25 (10)	29 (10)	30 (12)	18 (7)	10 (4)	18 (7)	130
1202	LAKE APOPKA	50 (20)	38 (15)	10 (4)	38 (15)	74 (29)	70 (28)	280
1203	LAKE BANANA	23 (9)	29 (10)	20 (8)	5 (2)	100 (40)	23 (9)	200
1206	LAKE CRESCENT	65 (26)	70 (27)	33 (13)	80 (32)	48 (18)	50 (20)	346
1207	DOCTORS LAKE	60 (24)	76 (30)	60 (24)	55 (22)	34 (12)	56 (22)	341
1208	LAKE DORA	53 (21)	35 (14)	18 (7)	33 (13)	90 (35)	68 (27)	297
1209	LAKE EFFIE	5 (2)	10 (4)	3 (1)	3 (1)	0 (0)	10 (4)	31
1210	LAKE GEORGE	45 (18)	54 (21)	48 (19)	43 (17)	23 (9)	43 (17)	256
1211	LAKE GIBSON	40 (16)	81 (32)	45 (18)	70 (28)	48 (18)	40 (16)	324
1212	GLENADA LAKE	43 (17)	54 (21)	85 (34)	53 (21)	3 (1)	38 (15)	276
1214	LAKE GRIFFIN	48 (19)	29 (10)	23 (9)	30 (12)	95 (38)	48 (19)	273
1215	LAKE HAINES	70 (28)	81 (32)	75 (30)	58 (23)	34 (12)	78 (31)	396
1217	LAKE HANCOCK	18 (7)	43 (17)	13 (5)	13 (5)	98 (39)	28 (11)	213
1219	LAKE HORSESHOE	93 (37)	70 (27)	80 (32)	78 (31)	20 (8)	65 (26)	406
1220	LAKE HOWELL	11 (4)	23 (9)	69 (27)	35 (14)	60 (23)	3 (1)	201
1221	LAKE ISTOKPOGA	85 (34)	76 (30)	65 (26)	93 (37)	69 (27)	89 (35)	477
1223	LAKE JESSUP	28 (11)	18 (7)	5 (2)	25 (10)	83 (32)	25 (10)	184
1224	LAKE KISSIMMEE	90 (36)	63 (25)	73 (29)	65 (26)	65 (26)	99 (39)	455
1227	LAKE LULU	3 (1)	3 (1)	15 (6)	0 (0)	8 (3)	5 (2)	34
1228	LAKE MARION	78 (31)	29 (10)	53 (21)	50 (20)	83 (32)	73 (29)	366
1229	LAKE MINNEHAHA	88 (35)	91 (36)	95 (38)	85 (34)	78 (31)	80 (32)	517
1230	LAKE MINNEOLA	100 (40)	98 (38)	98 (37)	100 (40)	90 (35)	93 (37)	579
1231	LAKE MONROE	38 (15)	15 (6)	28 (11)	75 (30)	26 (10)	33 (13)	215
1232	LAKE OKEECHOBEE	68 (27)	45 (18)	40 (16)	73 (29)	53 (21)	89 (35)	368
1234	LAKE POINSETT	58 (23)	60 (24)	50 (20)	95 (38)	34 (12)	45 (18)	342
1236	LAKE REEDY	95 (36)	13 (5)	55 (22)	45 (18)	34 (12)	95 (38)	337
1238	LAKE SOUTH	63 (25)	70 (27)	69 (27)	68 (27)	60 (23)	56 (22)	386
1239	LAKE TALQUIN	55 (22)	20 (8)	78 (31)	83 (33)	5 (2)	53 (21)	294

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1240	LAKE THONOTOSASSA	20 (8)	85 (34)	58 (23)	40 (16)	48 (18)	15 (6)	266
1241	LAKE TOHOPEKALIGA	33 (13)	40 (16)	38 (15)	48 (19)	40 (16)	30 (12)	229
1242	TROUT LAKE	15 (6)	8 (3)	43 (17)	23 (9)	13 (5)	8 (3)	110
1243	LAKE WEOHYAKAPKA	75 (30)	91 (36)	83 (33)	88 (35)	74 (29)	84 (33)	495
1246	LAKE YALE	98 (39)	58 (23)	90 (36)	63 (25)	83 (32)	75 (30)	467
1247	LAKE MUNSON	8 (3)	5 (2)	8 (3)	8 (3)	16 (6)	13 (5)	58
1248	LAKE SEMINOLE	35 (14)	48 (19)	35 (14)	10 (4)	69 (27)	63 (25)	260
1249	LAKE LAWNE	0 (0)	0 (0)	0 (0)	20 (8)	43 (17)	35 (14)	98
1250	LAKE TARPON	83 (33)	98 (38)	100 (40)	90 (36)	60 (23)	60 (24)	491
1252	LAKE ELOISE	30 (12)	50 (20)	63 (25)	28 (11)	16 (6)	20 (8)	207
1258	LAKE JESSIE	73 (29)	88 (35)	88 (35)	60 (24)	26 (10)	84 (33)	419
1261	EAST LAKE TOHOPEKALIGA	80 (32)	98 (38)	93 (37)	98 (39)	55 (22)	99 (39)	523
1264	PAYNE'S PRAIRIE LAKE (NO	11 (4)	65 (26)	25 (10)	15 (6)	90 (35)	0 (0)	206

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	1230	LAKE MINNEOLA	579
2	1261	EAST LAKE TOHOPEKALIGA	523
3	1229	LAKE MINNEHAHA	517
4	1243	LAKE WEOHYAKAPKA	495
5	1250	LAKE TARPON	491
6	1221	LAKE ISTOKPOGA	477
7	1246	LAKE YALE	467
8	1224	LAKE KISSIMMEE	455
9	1258	LAKE JESSIE	419
10	1219	LAKE HORSESHOE	406
11	1215	LAKE HAINES	396
12	1238	LAKE SOUTH	386
13	1232	LAKE OKEECHOBEE	368
14	1228	LAKE MARION	366
15	1206	LAKE CRESCENT	346
16	1234	LAKE POINSETT	342
17	1207	DOCTORS LAKE	341
18	1236	LAKE REEDY	337
19	1211	LAKE GIBSON	324
20	1208	LAKE DORA	297
21	1239	LAKE TALQUIN	294
22	1202	LAKE APOPKA	280
23	1212	GLENADA LAKE	276
24	1214	LAKE GRIFFIN	273
25	1210	LAKE THONOTOSASSA	266
26	1248	LAKE SEMINOLE	260
27	1210	LAKE GEORGE	256
28	1241	LAKE TOHOPEKALIGA	229

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
29	1231	LAKE MONROE	215
30	1217	LAKE HANCOCK	213
31	1252	LAKE ELOISE	207
32	1264	PAYNE'S PRAIRIE LAKE (NO	206
33	1220	LAKE HOWELL	201
34	1203	LAKE BANANA	200
35	1223	LAKE JESSUP	184
36	1201	ALLIGATOR LAKE	130
37	1242	TROUT LAKE	110
38	1249	LAKE LAWNE	98
39	1247	LAKE MUNSON	58
40	1227	LAKE LULU	34
41	1209	LAKE EFFIE	31

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 - cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR FLORIDA 8/25/75

LAKE CODE 1224 LAKE KISSIMMEE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 4149.2

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1224A1	2988.9	21.86	23.67	25.26	23.84	15.60	15.63	18.49	22.85	27.10	33.44	25.82	22.06	22.96
1224A2	4149.2	31.69	33.05	36.38	32.73	22.91	21.46	23.28	27.75	37.46	63.71	35.62	34.69	33.39
1224C1	396.3	3.26	3.20	3.31	3.00	2.04	2.18	3.26	3.71	4.90	5.47	4.25	3.54	3.51
1224D1	264.2	2.14	2.12	2.21	2.01	1.36	1.44	2.18	2.46	3.26	3.65	2.83	2.35	2.34
1224Z2	360.0	4.81	5.13	5.44	5.10	3.37	3.40	4.22	5.13	6.23	7.50	5.80	4.93	5.09

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 4149.2
SUM OF SUB-DRAINAGE AREAS = 4009.3
TOTAL FLOW IN = 406.79
TOTAL FLOW OUT = 400.43

NOTE *** B1 AND C1 DRAINAGE AREAS COMBINED

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1224A1	3	73	23.33	17	134.28				
	4	73	49.07	14	56.86				
	5	73	28.83	14	86.79				
	6	73	-3.20	23	19.26				
	7	73	-5.58	21	14.05				
	8	73	24.41	19	43.27				
	9	73	41.37	9	40.44				
	10	73	0.20	13	-28.37				
	11	73	-8.86	10	54.88				
	12	73	-8.50	9	-35.34				
	1	74	-2.38	27	7.76				
	2	74	0.82	3	-0.57				
1224A2	3	73	41.48	17	40.78				
	4	73	68.13	14	127.71				
	5	73	43.69	14	76.17				
	6	73	0.91	23	0.08				
	7	73	0.03	21	0.08				
	8	73	22.63	19	37.94				
	9	73	47.37	9	52.39				
	10	73	14.92	13	0.11				
	11	73	0.17	10	0.14				
	12	73	0.48	9	0.11				
	1	74	2.41	27	9.74				
	2	74	18.49	3	6.51				

TRIBUTARY FLOW INFORMATION FOR FLORIDA 8/25/75

LAKE CODE 1224 LAKE KISSIMMEE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
122401	3	73	2.49	17	2.38				
	4	73	2.61	14	2.40				
	5	73	1.90	14	2.15				
	6	73	1.50	23	1.25				
	7	73	2.21	21	2.46				
	8	73	2.83	19	2.63				
	9	73	4.08	9	4.16				
	10	73	3.94	13	4.11				
	11	73	3.00	10	3.17				
	12	73	2.49	9	2.52				
	1	74	2.24	27	2.04				
	2	74	1.76	3	2.01				
122401	3	73	1.64	17	1.59				
	4	73	1.76	14	1.87				
	5	73	1.27	14	1.44				
	6	73	0.99	23	0.82				
	7	73	1.47	21	1.67				
	8	73	1.87	19	1.76				
	9	73	2.69	9	2.78				
	10	73	2.63	13	2.75				
	11	73	2.01	10	2.12				
	12	73	1.64	9	1.67				
	1	74	1.50	27	1.36				
	2	74	1.16	3	1.33				
122422	3	73	4.08	17	3.91				
	4	73	4.45	14	4.73				
	5	73	3.14	14	3.57				
	6	73	2.35	23	1.93				
	7	73	2.84	21	3.20				
	8	73	3.91	19	3.65				
	9	73	5.18	9	5.30				
	10	73	5.41	13	5.64				
	11	73	4.13	10	4.36				
	12	73	3.45	9	3.51				
	1	74	3.31	27	3.03				
	2	74	2.83	3	3.23				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 75/08/25

122401
27 56 53.0 081 18 54.0
LAKE KISSIMMEE
12097 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/14	09 30	0000	24.7		32	150	7.20	11	0.100	1.400	0.080	0.006
	09 30	0006	24.5	6.2		120	7.30	15	0.080	1.200	0.070	0.004
73/09/05	16 30	0000	29.2		36	137	8.20	17	0.100	1.600	0.100	0.006
73/11/07	09 14	0000	23.2		40	107	7.10	16	0.060	1.400	0.040	0.010
	09 14	0001	23.2	7.4		107						
	09 14	0006	23.2	7.4		107	7.00	15	0.050	1.300	0.040	0.010

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/14	09 30	0000	0.041	12.0
	09 30	0006	0.040	
73/09/05	16 30	0000	0.037	30.2
73/11/07	09 14	0000	0.035	11.9
	09 14	0006	0.034	

STORET RETRIEVAL DATE 75/08/25

122402
27 57 01.0 081 14 43.0
LAKE KISSIMMEE
12097 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/14	10 00	0000	24.2		37	120	7.50	22	0.070	1.100	0.060	0.004
	10 00	0007	24.1	8.0		115	7.60	22	0.060	1.000	0.060	0.004
73/09/05	16 45	0000	28.7	8.0	36	137	8.00	22	0.120	2.200	0.120	0.006
	16 45	0008	28.6	7.6		136	7.40	24	0.120	2.800	0.130	0.013
73/11/07	09 03	0000	22.9		36	113	7.30	19	0.060	1.600	0.060	0.011
	09 03	0001	22.9	8.0		113						
	09 03	0007	22.8	7.4		114	7.20	18	0.060	1.500	0.050	0.010

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/14	10 00	0000	0.026	16.8
	10 00	0007	0.026	
73/09/05	16 45	0000	0.028	42.4
	16 45	0008	0.061	
73/11/07	09 03	0000	0.031	19.4
	09 03	0007	0.034	

STORET RETRIEVAL DATE 75/08/25

122403
27 54 15.0 081 17 00.0
LAKE KISSIMMEE
12097 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/14	10 30	0000	23.9		36	135	7.60	22	0.040	1.100	0.060	0.004
	10 30	0005	23.8	6.7		135	7.60	22	0.080	1.200	0.060	0.004
73/09/05	16 05	0000	29.1	8.2	34	145	8.50	20	0.130	1.900	0.120	0.007
	16 05	0004	28.0	6.8		140	7.20	20	0.130	1.700	0.140	0.007
73/11/07	08 49	0000	23.2		36	114	7.00	19	0.050	1.400	0.050	0.010
	08 49	0001	23.2	8.0		114						
	08 49	0007	23.2	8.0		115	7.00	17	0.040	1.700	0.050	0.010

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/14	10 30	0000	0.033	19.9
	10 30	0005	0.034	
73/09/05	16 05	0000	0.030	36.6
	16 05	0004	0.045	
73/11/07	08 49	0000	0.054	22.2
	08 49	0007	0.039	

STORET RETRIEVAL DATE 75/08/25

122404
27 51 15.0 081 12 56.0
LAKE KISSIMMEE
12097 FLORIDA

11EPALES
3

2111202
0007 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/14	10 50	0000	24.0		42	135	7.90	23	0.080	1.200	0.070	0.005
	10 50	0005	23.9	8.7		148	8.00	19	0.080	1.100	0.080	0.007
73/09/05	15 45	0000	29.0	7.8	35	144	7.60	19	0.120	2.100	0.120	0.007
73/11/07	08 35	0000	23.0		36	113	7.20	18	0.070	1.600	0.090	0.015
	08 35	0001	23.0	7.6		113						
	08 35	0005	23.0	7.7		114	7.30	19	0.050	1.500	0.050	0.012

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/14	10 50	0000	0.030	15.0
	10 50	0005	0.028	
73/09/05	15 45	0000	0.032	40.9
73/11/07	08 35	0000	0.036	22.4
	08 35	0005	0.037	

APPENDIX E

TRIBUTARY DATA

STORET RETRIEVAL DATE 75/08/25

1224A1
27 56 30.0 081 22 00.0
KISSIMMEE RIVER
12117 7.5 LK WEOHYAKAP
I/LAKE KISSIMMEE
FERRY LANDING N OF BUSTER ISLAND
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/17	10 30		0.027	2.200	0.059	0.015	0.118
73/04/14	10 00		0.014	1.750	0.336	0.105	0.105
73/05/14	12 00		0.018	1.760	0.120	0.021	0.070
73/07/21	13 00		0.037	1.000	0.054	0.012	0.050
73/08/19	12 00		0.010K	1.150	0.089		0.063
73/09/09	13 00		0.029		3.700	0.029	0.060
73/10/13	12 00		0.105	4.700	0.290	0.042	0.110
73/11/10	11 00		0.088	0.950	0.060	0.028	0.035
73/12/09	12 00		0.132	0.900	0.030	0.024	0.040
74/01/27	11 45		0.088	0.850	0.052	0.016	0.032
74/02/03	12 30		0.120	3.400	0.155	0.025	0.045

K VALUE KNOWN TO BE
LESS THAN INDICATED

IORET RETRIEVAL DATE 75/08/25

1224A2
27 48 30.0 081 12 00.0
KISSIMMEE RIVER
12 7.5 LK MARIAN SW
O/LAKE KISSIMMEE
ST HWY 60 BRDG OVER S FINGER OF LAKE
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/17	13 15		0.011	1.900	0.062	0.011	0.055
73/04/14	09 00		0.010K	1.470	0.015	0.010	0.040
73/05/14	10 00		0.010K	2.000	0.022	0.007	0.045
73/07/21	10 00		0.010K	0.890	0.018	0.006	0.040
73/08/19	08 00		0.010K	1.260	0.031	0.015	0.040
73/09/09	10 00		0.010K	2.700	0.110	0.020	0.040
73/10/13	09 30		0.014	1.250	0.044	0.014	0.040
73/11/10	09 00		0.012	0.800	0.024	0.008	0.020
73/12/09	09 30		0.016	1.350	0.052	0.008	0.030
74/01/27	10 00		0.012	0.900	0.016	0.008	0.020
74/02/03	10 00		0.008	0.800	0.020	0.010	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122481
27 55 30.0 081 21 00.0
TIGER CREEK
12 7.5 LK WEOHYAKAP
T/LAKE KISSIMMEE
FROM BOAT OFF DIRT RD IN THAT REGION
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/17	11 40		0.010K	0.960	0.020	0.008	0.020
73/04/14	12 00		0.023	1.050	0.042	0.012	0.035
73/05/14	10 45		0.050	0.750	0.035	0.020	0.045
73/06/23	11 00		0.063	1.100	0.105	0.025	0.055
73/07/21	12 10		0.013	0.750	0.035	0.012	0.040
73/08/19	11 00		0.020	0.720	0.039	0.027	0.027
73/09/09	12 00		0.020	3.990	3.100	0.021	0.035
73/10/13	10 30		0.013	2.100	0.251	0.017	0.050
73/11/10	10 45		0.012	0.725	0.036	0.012	0.015
73/12/09	11 00		0.010K	2.300	0.330	0.020	0.025
74/01/27	11 15		0.032	0.600	0.020	0.012	0.030
74/02/03	11 30		0.008	0.600	0.025	0.020	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

ORET RETRIEVAL DATE 75/08/25

122401
27 56 30.0 081 21 30.0
UNNAMED CREEK
12 7.5 LK WEOHYAKAP
T/LAKE KISSIMMEE
DIRT RD BROG ON BUSTER ISLAND
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/14	11 00		0.012	1.300	0.038	0.013	0.040
73/05/14	11 00		0.026	0.900	0.097	0.009	0.035
73/06/23	12 00		0.015	0.800	0.019	0.013	0.035
73/07/21	12 00		0.011	1.150	0.042	0.006	0.035
73/08/19	11 30		0.013	0.950	0.072	0.013	0.020
73/09/09	12 30		0.029	1.200	0.170	0.019	0.030
73/10/13	11 00		0.034	3.700	0.294	0.016	0.025
73/11/10	10 30		0.010K	1.250	0.032	0.008	0.015
73/12/09	11 15		0.024	1.800	0.084	0.012	0.012
74/01/27	11 30		0.020	0.700	0.020	0.008	0.020
74/02/03	11 45		0.008	0.600	0.025	0.010	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122401
27 53 00.0 081 11 00.0
JACKSON CANAL
12 7.5 LK MARION NW
T/LAKE KISSIMMEE
BRDG ON RD S OF LAKE JACKSON
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/04/14	13 00		0.020	1.320	0.082	0.022	0.034
73/05/14	11 00		0.032	1.200	0.050	0.021	0.065
73/06/23	10 00		0.011	1.150	0.054	0.020	0.065
73/07/21	11 00		0.031	1.800	0.110	0.010	0.050
73/08/19	09 30		0.010K	1.150	0.030	0.016	0.045
73/09/09	10 30		0.017	1.380	0.078	0.025	0.050
73/10/13	10 00		0.010K	1.000	0.033	0.015	0.050
73/11/10	09 30		0.012	1.900	0.068	0.008	0.015
73/12/09	10 00		0.014	1.900	0.056	0.010	0.020
74/01/27	10 30		0.010K	0.900	0.012	0.008	0.030
74/02/03	10 30		0.004	0.700	0.005	0.010	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED